

# Analysis of the college teachers' classroom teaching charm based on gender

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**Abstract.**From a gender perspective, this research utilized questionnaires administered to college students and faculty, and applied statistical analysis to investigate the shared perceptions of both groups regarding teachers' language, demeanor, and appearance. Additionally, the study evaluated the impact of these factors on the perceived charisma of instructors during classroom sessions. Results indicate that female instructors are perceived as more charismatic than their male counterparts. A teacher's linguistic charm can enhance students' critical thinking skills, and those with a visually appealing presence tend to captivate students more effectively. In terms of charismatic classroom behaviors, male instructors exhibit less expressiveness in facial cues compared to female instructors. However, male instructors excel in modulating their vocal pitch during lectures. When juxtaposing eye contact with gesturing, educators often prefer gesturing to convey teaching charisma. Furthermore, the act of moving around the classroom by teachers can lead to perceptual disparities between students and instructors.

## 1. Introduction

Contemporary college classroom teaching is influenced by myriad factors. Affective elements, for instance, play a role in determining student behaviors and outcomes in foreign language learning [1]. Likewise, ambiguous teaching objectives can result in suboptimal outcomes [2]. Concurrently, with many college students exhibiting poor study habits and diminished interest in learning, traditional collective classroom instruction struggles to fulfill student needs [3]. As a result, numerous educators are gravitating towards adaptive teaching methodologies to augment teaching efficacy [4]. Deslauriers, for instance, enhanced pedagogical approaches by evaluating the impact of active versus passive teaching on student cognition [5]. Theobald determined that curricula integrating deliberate practice with inclusive teaching reduced disparities in student performance [6]. This study seeks to probe the implications of instructor charisma on university and college classroom instruction.

Historically, charisma, as a personal quality, denoted the 'divine gift of grace' in early Christian theology [7]. In more recent interpretations, Weber posited that charisma signifies an inherent foundational legitimization principle, emblematic of leadership and authority [8]. Charismatic leaders undeniably influence their disciples [9], and Niu highlighted that educators often emulate leadership traits during instruction [10]. Yet, in numerous autonomous higher education institutions, educators frequently exhibit diminished enthusiasm due to daunting instructional responsibilities and challenges in achieving tangible success with students. Consequently, students' ardor

wanes due to ambiguous educational objectives and cursory teaching methods [11]. This diminishes the teacher's influence in classroom teaching. Thus, elevating educator charisma in academic settings is pivotal for refining overall instructional quality [12].

Whalen's study posits that male charm is often perceived as 'serious', while female charm is labeled 'frivolous' [13]. While such a perspective smacks of gender bias, it's noteworthy that college students do not exhibit significant gender prejudice towards female lecturers [14]. Research also reveals that in primary education settings, female educators often take on predominant roles. Conversely, at higher institutional levels, men are more frequently found in leadership roles [15]. A disparity is also evident across academic disciplines in higher education: while women constitute nearly half of the educators in humanities, they represent less than a third in other fields [16]. Despite a decline in workplace gender bias, associated gender-centric issues often remain under-addressed [17].

This paper seeks to dissect the role of gender in shaping perceptions of instructor charisma. By assessing congruence in student and educator perceptions of teaching charisma, and evaluating the influence of instructor charisma on students, we aim to discern the impact of gender on the charismatic projection of educators within the classroom.

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## 2.Data

In order to fully reveal the whole process of classroom teaching charm, we conducted a 5-point Likert scale questionnaire for students and teachers to explore the homogeneity and influence of students' and teachers' cognition of classroom teaching charm from a gender perspective, and whether teachers' gender and classroom teaching duration have an impact on classroom teaching charm.

### 2.1. Students

We enrolled 1,000 participants: 543 males and 457 females, all junior college students hailing from over ten provinces in China. For the questionnaire's structure, we integrated the cognitive and metacognitive segments from MSLQ [18] with Bunglowala's framework on students' perceptions of teachers' verbal and non-verbal engagement in classroom instruction [19]. To ensure the questionnaire's reliability, we utilized UPI [20] as a calibration tool. During data collection, 186 participants (105 males and 81 females) were excluded.

From the gathered data, approximately 561 (69%) participants perceived female educators as possessing classroom charisma. Xiong & Li [21] suggests that these distinct attributes ascribed to female teachers are socially and culturally constructed, and influenced by traditional Chinese values, female teachers often face differential expectations. For analytical purposes, we categorized student perceptions of teaching charisma into two domains: verbal and non-verbal, each further subdivided into cognitive and metacognitive components. We defined cognitive structures using variables such as rehearsal, elaboration, organization, and critical thinking. Concurrently, six behaviors [22] –facial expressions, eye contact, gesturing, patting students, modulating pitch, and classroom mobility–were employed as metrics to gauge the charisma of instructional behaviors. The student-scale demonstrated strong internal consistency across domains: cognitive verbal (Cronbach's  $\alpha = 0.935$ ), metacognitive verbal (Cronbach's  $\alpha = 0.898$ ), cognitive non-verbal (Cronbach's  $\alpha = 0.984$ ), and metacognitive non-verbal (Cronbach's  $\alpha = 0.907$ ).

### 2.2. Teachers

Additionally, we conducted a questionnaire survey with 65 college educators (26 males and 39 females) across China to gauge their self-perception of teaching charisma. To assess teachers' self-perception of classroom charisma, we incorporated the two dimensions of teaching objectives and content from educators' self-evaluation criteria [23]. To ascertain the questionnaire's reliability, the Hartman Personality Test [24] was utilized as a calibration tool, leading to the exclusion of 13 invalid responses (2 males, 11 females).

To better evaluate the correlation between classroom instructional duration and perceived teaching charisma, we incorporated demographic information such as standard teaching hours and years of teaching experience

into the questionnaire. Using the teaching content and objectives from a comprehensive evaluation framework for college educators [25], we delineated the structural variables gauging instructors' charm perceptions. Both dimensions, teaching objectives (Cronbach's  $\alpha = 0.714$ ) and teaching content (Cronbach's  $\alpha = 0.896$ ), displayed satisfactory internal consistency.

## 3.Model

In this section, we estimate the homogeneity of male and female students' and teachers' perceptions of classroom teaching charm and the influence of teachers on students' classroom teaching charm based on the questionnaire data, and establish a simple test score statistical model.

### 3.1. Homogeneity

For students, we computed the aggregate scores for the five facets of their learning process: rehearsal, elaboration, organization, critical thinking, and metacognition. This was achieved using the contribution rate of their observed variables. Let denote the composite score vector for male students' cognitive perceptions of teaching charisma in a specific domain, and symbolize the analogous score vector for female students. Drawing inspiration from the affinity scoring system between genders in social networks as proposed by Veldt & Kleinberg [26], we derived a measure of cognitive congruence regarding teaching charisma between male and female students. This measure was determined through the ratio of Pearson correlation to total variance, defined as:

$$H_1 = \frac{\text{Cor}(X_i, Y_i)}{[(n_X - 1) * S_X^2 + (n_Y - 1) * S_Y^2] / (n_X + n_Y - 2)} \quad (1)$$

Where  $n_X, n_Y$  represent the number of elements of  $X_i, Y_i$ , respectively, and  $S_X^2, S_Y^2$  represent their vector variances.

For teachers, we use the teaching objectives and teaching content of teachers' teaching self-evaluation as variables to observe teachers' teaching charm cognition, and use matrix  $Z$  ( including teaching content and teaching objectives ) as the characteristic matrix of teachers' classroom teaching charm cognition. At the same time, we find that teachers' teaching experience will affect their self-teaching evaluation [27], so we introduce classroom teaching unit time as a variable of our whole model. We define its homogeneity score as:

$$H_2 = \frac{\beta(\|\text{Cor}(Z_x, Z_y)\|^{t_2} - \|\text{Cor}(Z_x, Z_y)\|^{t_1})}{\sum_n (Z_x - Z_y)^2} \quad (2)$$

Where  $Z_x, Z_y$  represent the comprehensive matrix of male and female teachers respectively,  $t_2$  represents the deadline of classroom teaching unit,  $t_1$  represents the initial time of classroom teaching unit,  $n$  represents the number of elements in the matrix, and  $\beta$  represents the constant.

### 3.2. Behavioral influence

To ascertain the influence scores concerning cognitive perceptions of classroom teaching charisma, we computed the respective expectations of teachers and students. The mutual impact on students' teaching self-perception can be transposed [27]. This bifurcates student learning into two categories: teacher-centered and student self-centered. In teacher-centered learning, educators guide and assess the student learning trajectory. In contrast, student self-centered learning epitomizes a more progressive, reciprocal instructional approach. While this instructional influence predominantly manifests in a teacher's verbal communication [19], it's imperative to acknowledge the significance of a teacher's behavioral influence as an integral facet of their classroom delivery. Consequently, we posit that a positive influence score indicates teacher-centered learning, while a negative score suggests student self-centered learning. Simultaneously, we deem teaching experience a pivotal determinant in gauging a teacher's influence. The model, based on parameter simulation, is delineated as:

$$F(p) = E(P_t) - E(P_s) \quad (3)$$

$$I(t) = A(F, t) \quad (4)$$

Where  $P_t$  represents the teacher's cognition score of the charm of self-classroom teaching behavior,  $P_s$  represents the average score of students' cognition of the charm of teachers' classroom teaching behavior in each stage of the learning process,  $E()$  is its expectation,  $t$  is the unit time of course teaching, and  $A()$  is its time parameter function. Through the parameter simulation of the above function, we obtain the teacher's behavior influence function with the unit time of classroom teaching as the independent variable.

## 4. Result

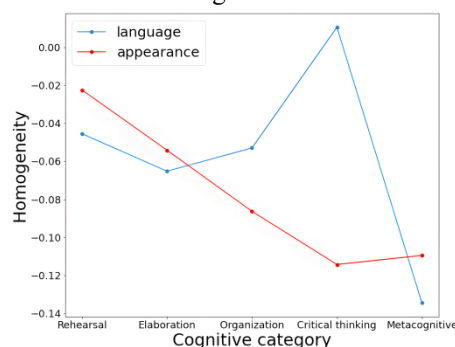
### 4.1. Homogeneity

#### 4.1.1 Student

Across the three dimensions we evaluated, a negative value emerged when gauging the cognitive congruence of male and female students regarding classroom teaching charisma. In the Figure 1, interpreting this through a gender lens, there seems to be minor divergence in students' perception of teaching charisma. The congruence in perceptions related to teachers' overt teaching charisma tends to broaden in tandem with the students' evolving cognitive processes. Furthermore, metacognitive congruence exhibits a slight enhancement when juxtaposed with critical thinking congruence. This underlines the intermediary role that self-regulation plays between metacognitive awareness and critical thinking [28,29]. The congruence in language-based teaching charisma demonstrates an initial decline followed by an ascent. The minor congruence seen in critical thinking between male and female students also reaffirms the

robust association between teachers' academic language familiarity and critical thinking, as highlighted by Grosser [30].

Consequently, our findings suggest that as the learning journey deepens, the cognitive disparities between male and female students concerning a teacher's appearance-based teaching charisma tend to widen. In the realm of language teaching charisma, male and female students' critical thinking appears more aligned. Concurrently, the cognitive divergence observed in metacognitive facets of a teacher's appearance-based charisma is notably narrower than that of language-based charisma. Echoing this, Baker [31] discovered that appearance influences customer perception and satisfaction, while the language of the employee predominantly impacts customer authenticity perception. This implies that appearance exerts a broader impact on students' evaluations of classroom teaching charisma compared to language. Hence, we posit that appearance stands as a pivotal determinant when students assess the allure of classroom teaching.



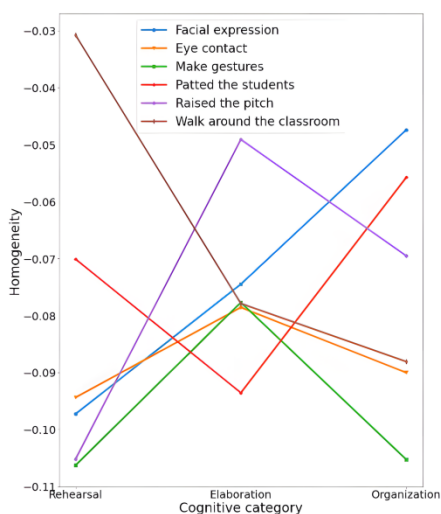
**Figure.1.** Male and female students scored on the cognitive homogeneity of teachers' language and appearance teaching charm throughout the learning cognitive process. In the figure, the score of the language cognition part shows a slow upward trend until it reaches the metacognitive part, and then decreases rapidly. The score of the appearance cognitive part gradually decreased until it reached the metacognitive part and then showed an upward trend.

From the cognitive homogeneity of behavioral teaching charm in Figure 2, the linear growth in facial expressions with the learning progression suggests a convergence in male and female students' perceptions of teaching charisma. This can be attributed to facial expressions often mirroring teachers' emotional shifts, which in turn influence students' cognitive load [32]. Movement around the classroom, another significant behavior, alters the spatial dynamics between teachers and students. This variable spatial relationship introduces differing perceptions of teaching charisma across genders. While some educators adopt individualized teaching strategies to enhance classroom charisma through structured symbolic actions, this approach can introduce spatial inconsistencies [33].

Behaviors such as maintaining eye contact, modulating pitch, and gesturing share similar trajectories. These behaviors underscore the teacher's focus on curricular content. Students, sensing the emotional undertones of these actions, can anticipate shifts in pedagogical strategies. Notably, an elevated pitch can intensify the educator's teaching emotion and offer rich

pedagogical cues [34], thereby sharpening students' attentiveness and understanding.

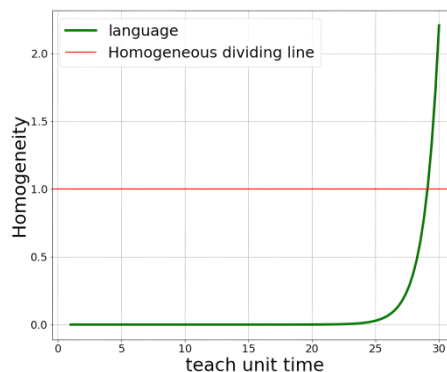
However, the act of 'patting students' remains controversial. Given the varying age and gender dynamics among students, interpretations of this gesture diverge. Male teachers, in particular, are often cautious about physical interactions with female students to sidestep potential allegations [35]. While such tactile interactions might be employed to provide classroom cues or as a disciplinary measure, the blurred lines between appropriate touch and potential corporal punishment, compounded by ambiguous policies, muddle an objective assessment of teaching charisma, leading to student ambivalence.



**Figure.2.** Male and female students' cognitive homogeneity scores on the six behaviors of teachers' teaching charm in the whole learning cognitive process, in which walk around the classroom gradually decreased and facial expression gradually increased, raised the pitch, eye contact and make gesture first went up and then down, while patted the students first went down and then up

#### 4.1.2 Teacher

Contrary to students' perceptions of teaching charisma, the positive score of cognitive homogeneity in self-evaluated teaching charm for both male and female teachers indicates gender congruence in their self-assessments. We use a homogeneity score of 1 as the baseline; scores above this line indicate strong homogeneity, below suggest weak homogeneity, and a score of 0 denotes no congruence. Figure 3 illustrates an absence of congruence in the perception of linguistic teaching allure among male and female teachers for approximately 24 teaching units. However, there's a notable surge in congruence when unit times exceed the 25 to 30 range, suggesting that homogeneity isn't necessarily proportional to time but may surge after reaching a threshold.



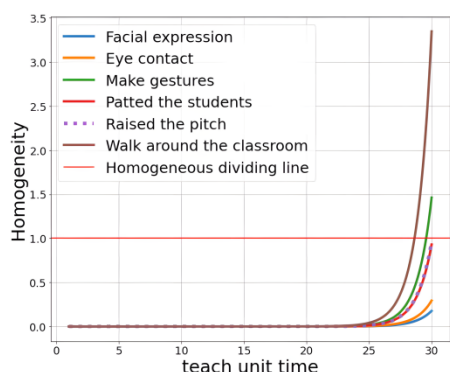
**Figure3.** Male and female teachers' cognitive homogeneity score for self-language teaching charm, there is no homogeneity between male and female teachers in the longer classroom teaching unit time, and after the teaching unit time passed about 24, the homogeneity showed a rapid upward trend. After 28, the homogeneity exceeded the homogeneous dividing line and showed strong homogeneity.

Figure 4 underscores the rapid ascent in congruence regarding teachers' mobility in the classroom. Conversely, a stationary position at the podium is often perceived as a mark of authority. Most teachers concur that strategic spatial utilization in the classroom enhances teaching allure. Yet, students often hold divergent views on this aspect. Hall [36] contends that the classroom represents a dynamic negotiation space between students and teachers. However, the potent symbolic role teachers play and the variances in spatial interpretation [37] might mean that what educators perceive as alluring can introduce cognitive strain in students, potentially recasting pedagogical interactions as cautionary.

Gesturing, while deemed less congruent than classroom mobility, is seen by Lim as a more authoritative form of communication [38]. This mirrors the cognitive dissonance between educators' perceptions of classroom allure and their perceived authority. Striking a balance between allure and authority, intrinsic human traits, is pivotal for educators to ensure efficacious teaching.

Furthermore, the behaviors of patting students and modulating pitch share a similar trajectory, both symbolizing teachers' emphasis on discipline. The spatial proximity inherent in such interactions may, at times, compromise the rapport between educators and pupils, especially when compared to one-on-one sessions post-classes [39].

Lastly, the lowest congruence scores are seen in facial expressions and eye contact. This could be attributed to females' innate gender bias in facial recognition [40]. Female educators, more than their male counterparts, are attuned to facial nuances, resulting in lesser congruence in teaching allure compared to other behaviors.



**Fig. 4.** Male and female teachers' cognitive homogeneity scores of the six self-behavior teaching charms. As the same as language teaching charm cognition, there is no homogeneity between male and female teachers in the longer classroom teaching unit time. Walk around the classroom and make gestures show strong homogeneity with the increase of classroom teaching unit time exceeding the the homogeneous dividing line. The homogeneity of patted the students and rased the pitch tends to be consistent, and the homogeneity of eye contact and facial expression is the lowest.

## 4.2. Behavioral influence

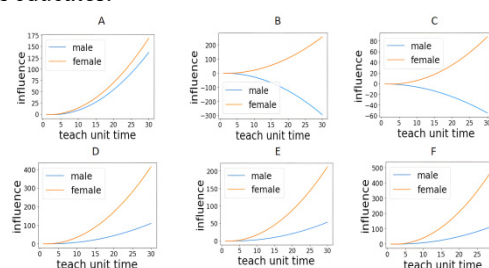
### 4.2.1 Teaching objectives

Teaching objectives serve as a critical benchmark for assessing curriculum completion and evaluating teacher performance. As seen in Figure 5, the influence of both male and female teachers' behavioral allure during brief classroom units on achieving teaching objectives remains indistinct. However, as the duration extends, the influence of female teachers' behavioral allure supersedes that of their male counterparts, aligning with perceptions that students find female teachers more captivating. Concurrently, male teachers' behaviors, specifically eye contact and gesturing, trend negatively over extended teaching units. This suggests that students' perceptions of these behaviors evolve to become more self-focused over time. Essentially, male teachers' actions fail to achieve desired impacts on teaching objectives, and students' interpretations of these behaviors misalign with male educators' anticipations.

While prison-based studies [41] indicate inmates' preference for male experts over female counterparts, other research posits that prolonged eye contact with women coupled with positive facial expressions can distort time perception, making it feel protracted [42]. This underscores that female teachers' eye contact becomes progressively captivating over time relative to their male peers. Comparing with Figure 6, we discern that while male teachers appear to emphasize eye contact more in relation to teaching content, they fall short when it comes to higher-order teaching objectives. Female teachers excel in this domain.

Gestures, often conveying unspoken nuances [43], serve to enrich and express knowledge. From the recipient's perspective, Wakefield posits that educators using iconic gestures are perceived favorably by students [44]. This reiterates that the fulfillment of teaching

objectives remains paramount in determining the efficacy of an educator.

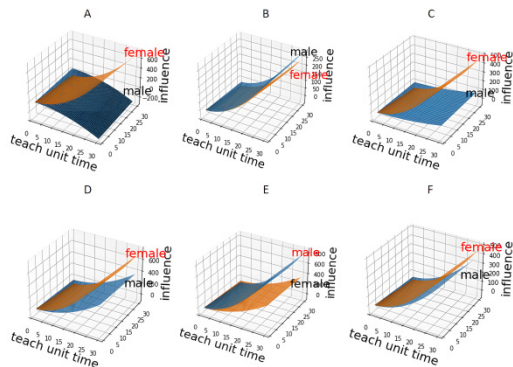


**Fig.5.** The influence of male and female teachers on the charm of classroom teaching in the implementation of teaching objectives, the influence of male and female teachers in the shorter classroom teaching time is 0. ( A ) Facial expression, the two trends are almost the same, but female teachers are better than male teachers ( B ) Eye contact, the influence of female teachers is gradually strengthened, and the influence of male teachers is negative. ( C ) Make gestures, graphic trends and eye contact are the same, but the absolute value of the influence of male and female teachers is smaller than that of eye contact. ( D ) Patted the students, female teachers' influence grows faster than male teachers ( E ) Raised the pitch, the trend is consistent with the pat students, but the influence of male and female teachers in the teaching unit time is lower than that of the pat students ( F ) Walk around the classroom, the trend is consistent with the previous two behaviors. The influence of female teachers is higher than that of the former two, and the influence of male teachers is consistent with that of male teachers.

### 4.2.2 Teaching content

Central to classroom instruction, teaching content assesses the methods teachers employ to convey knowledge to students. As observed in Figure 6, male teachers' facial expressions display a negative correlation over prolonged unit teaching durations, indicating their ineffectiveness in leveraging facial expressions to enhance teaching appeal. This is attributable to facial expressions being an external manifestation of emotions [45]. For students, discerning the teaching intent behind male teachers' facial expressions can be challenging, especially if those educators lack inherent physical appeal. Additionally, research suggests men are more overt in expressing anger compared to women [46]. Consequently, students may be inclined to resist or misconstrue male teachers' facial cues, particularly during content delivery. In contrast, owing to their inherent appeal, female teachers effectively utilize facial expressions, rendering teaching content more engaging and explicit.

Similar to eye contact, a heightened pitch proves more effective for male teachers than their female counterparts. Pitch variations influence listeners' auditory perceptions and recognition [47], making it a focal strategy for teachers to amplify content delivery. Owing to physiological differences, male pitches naturally register lower than those of females. Hence, male educators adopting a higher pitch can enhance their pedagogical charm and efficacy in content delivery.



**Fig. 6.** The influence of male and female teachers on the charm of classroom teaching in the implementation of teaching content, the same as the teaching goal, the influence of male and female teachers in a short period of time is 0. ( A ) Facial expression, female teachers show a rapid upward trend, and the influence of male teachers is negative ( B ) Eye contact. The development trend of male teachers and female teachers is almost the same, but in 30 classroom teaching units, male teachers are higher than female teachers ( C ) Make the gestures, The influence of female teachers rises rapidly but is lower than that of facial expressions, while the influence of male teachers has little change. ( D ) Patted the students, the influence trend of female teachers is consistent with the influence of facial expression, and the influence of male teachers is about half ( E ) Raised the pitch, the influence trend of male teachers is the highest in these six actions, and female teachers are half of male teachers. ( F ) Walk around in the classroom, The influence trend of female teachers is consistent with the gesture, and male teachers are slightly lower than female teachers.

## 5. Discussion and conclusions

This paper examines the congruence of classroom teaching allure among students and teachers, focusing on language, appearance, and behavior through a gendered lens, while also considering the impact of teachers' behavior on students' perceptions. Our findings indicate that, in the perception of tertiary students, female teachers possess a more pronounced classroom teaching allure than their male counterparts. This heightened allure is attributed not only to the distinct charismatic leadership inherent in female educators during instruction [48], but also to the traditional roles women embrace as nurturing figures in Chinese culture [49]. As such, college students exhibit a heightened sensitivity to the allure exuded by their female educators. Conversely, the confident demeanor radiated by male teachers is not as potently acknowledged by these students. From the student's vantage point, male instructors' teaching methodologies underscore an authoritative knowledge approach, with students' limited receptivity to such knowledge influencing their perception of these educators' appeal. However, it remains to be seen if students' advancing academic prowess would bolster their appreciation for the allure of male educators. Future research should investigate the potential correlation between students' academic proficiency and their perception of teaching allure.

Furthermore, our study identifies language as a pivotal instrument for educators to manifest their classroom allure, fostering the cultivation of students'

critical thinking abilities. Appearance serves as an early indicator of gender identity development [50]. Innate physiological and cognitive disparities exist between genders, with appearance standing as a significant marker of personal allure. Educators can leverage their intrinsic aesthetic appeal to engage students actively in the learning journey. However, equating aesthetic appeal with teaching allure warrants caution. While it's undeniable that aesthetically pleasing educators may facilitate enhanced learning outcomes, as corroborated by Zhao's assertion that educators' attire and physical appearance can elevate their teaching efficacy [51], it remains an open question as to whether it's their aesthetic appeal or their instructional allure that truly captivates students. This aspect merits exploration in subsequent studies.

Thirdly, among the six charismatic teaching behaviors, females typically exhibit more positive facial expressions than males [52]. Our observations indicate a strengthening alignment of students' cognition with teachers' facial expressions over time. This suggests that male teachers may be less adept at leveraging facial expressions during instruction compared to their female counterparts. Concurrently, the practice of teachers moving around the classroom, a tactic to engage the teaching space, appears to diminish this shared student cognition over time. Interestingly, while this roaming behavior is consistent in teachers' self-perception, it introduces a cognitive dissonance among students. This divergence, likely stemming from individual boundaries and perceptions, underscores the need for pedagogical adaptability. Notably, both eye contact and gesturing converge in students' perceptions. However, within the teaching community, gesturing is more prevalently seen as a charismatic behavior. Furthermore, our data indicates that male teachers employing these behaviors may inadvertently promote a more self-centered learning approach among students, hindering the realization of optimal teaching outcomes. Notably, while both patting students and raising the pitch align with teachers' internal perceptions, students find an elevated pitch more charismatic in male teachers compared to females.

Lastly, while gender remains a significant influencer of perceived classroom charisma, the future of tertiary education demands technological innovation and adaptability. Strategies such as personalized digital instruction [53] or aligning teaching methods with core educator values [54] can enhance the inherent charismatic potential of educators, benefiting the broader educational landscape.

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